Supporting Large-Scale Collaborative Deliberation: The MIT Deliberatorium

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MIT Center for Collective Intelligence



The Center for Collective Intelligence

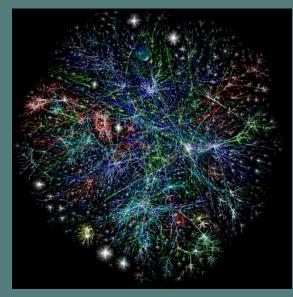
- Founded as Center for Coordination Science in 1995, re-focused on Collective Intelligence in 2006
 - Creating new examples of collective intelligence
 - The Climate Collaboratorium
 - > The Deliberatorium
 - > Open Modeling/Climatepedia
 - Prediction Markets
 - We are Smarter then Me
 - Studying collective intelligence in today's organizations
 - Distributed Colaboration
 - Sensible Organizations
 - Developing theories of collective intelligence
 - ◆ The Handbook of Collective Intelligence
 - Measuring Collective Intelligence

Outline

- The challenge: enabling collaborative deliberation for complex problems
- Limitations of current technologies
- Our approach: the Deliberatorium
- Evaluation results: Naples, Zurich, Intel
- Future Directions

The Challenge

The Internet enables unprecedented opportunities for large scale *knowledge sharing* via "social computing" platforms (e.g. email, newsgroups, chat, forums, blogs, wikis, podcasts, etc.)



Can it foster *collaborative deliberation* - i.e. the synergistic
(additive or even super-additive)
channeling of many minds
towards solving complex and
controversial problems?



What's Wrong with Current Collaboration Tools?

With most current tools (e.g. forums, blogs, email, IM) interactions are organized by *time*

Italy will win the soccer world cup again in 2010

No, Brazil will. They have better players

But Italy has a better trainer

There are many other good teams. What about Argentina?

Listen, no one can compare to Brazil

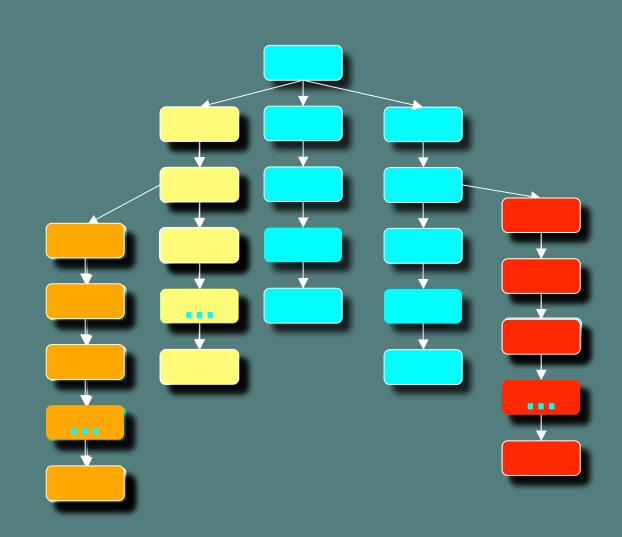
I heard they are getting some new players

Who told you that?

Scattered Content

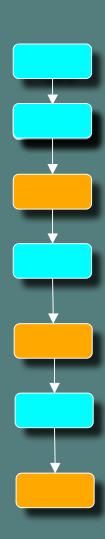
Discussions typically meander from topic to topic in an unsystematic way producing scattered content & haphazard coverage

People tend to cluster into multiple disjoint (balkanized) discussions



The Soapbox Problem

The last to speak is the last to be heard, which encourages lots of redundant post cycles, especially for controversial topics: "small voices" tend to get drowned out



Flawed Argumentation

In current collaboration tools, there is no inherent bias towards well-founded argumentation



What About Wikis?

It's true: wikis are organized topically, one article per topic

But: wiki articles by their nature capture consensus, and thus typically

fare poorly with controversial topics

- producing "least-commondenominator" content
- often as a result of wasteful "edit wars"
- where the controversial core of the deliberation is moved to massive "talk pages", which are time-centric
- and thus prone to the same limitations as other collaborationsupport technologies



Scattered content

Soapbox problem

Flawed argumentation



Incomplete and often flawed content

Hard to make sure your voice is heard

Hard to find the good stuff amongst all the noise



Argument Mapping Can Help!

Argument mapping can address these limitations by the simple but powerful trick of organizing contributions by topic, rather than by time.

Contributions are broken down into issues, ideas, and arguments

1 issue	a problem that needs to be solved
idea	an approach for addressing that issue
argument	an point for (pro) or against (con) an idea

Every point can only appear once and is attached to the point it logically refers to





What government policy can best meet our targets for reducing greenhouse gas emissions?



Use carbon tax



Use cap and trade



Prone to be gamed by industry



You're right - see EU experience



How will certificates be distributed?



Given away for free by the government



Sold to the highest bidder

An Example

Planeta.com (5/1/08) had a 13-page discussion on carbon offsetting pros and cons



Planeta Forum

time to teach a new way

☑ FAQ ☑ Search Ⅲ Memberlist ☐ Usergroups ☑ Register Profile OLog in to check your private messages OLog in

Carbon Emission Offsetting Goto page 1, 2 Next





Planeta Forum Forum Index -> Climate

View previous topic :: View next topic Author Message planeta DPosted: Fri Apr 15, 2005 6:05 am Post subject: Carbon Emission Offsetting (Q quote) Site Admin Does Carbon Emission Offsetting work? Joined: 14 May 2003 Posts: 6000 Last edited by planeta on Sun May 15, 2005 5:53 pm; edited 3 times in total Location: Oaxaca, Mexico (profile) (strong pm) (www) Back to top planeta Site Admin D Posted: Sat Apr 16, 2005 6:18 am Post subject: Elsewhere on the Web (quote ELSEWHERE ON THE WEB -- The following websites feature information pro and con about Joined: 14 May 2003 carbon offsetting Posts: 6000 Location: Oaxaca, Mexico CON The carbon shop: planting new problems - Larry Lohmann/World Rainforest http://www.wrm.org.uy/plantations/material/carbon.html#fix Sinkwatch http://www.sinkswatch.org Publications - Sinkswatch http://www.sinkswatch.org/pubs.html Transnational Institute http://www.tni.org Carbon Trade Watch - Transnational Institute http://www.tni.org/ctw PRO

My Climate

http://www.my-climate.com

Survey - My Climate

http://www.my-climate.com/anavosti.pdf

HARD TO CLASSIFY

Carbon Neutral Meeting

http://www.unep.org/dpdl/civil_society/GCSF/carbon-neutral.asp

PLANETA REFERENCE

Environmental Impact of Transportation Conference http://www.planeta.com/ecotravel/tour/transportation.html

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planeta Site Admin

DPosted: Sun May 15, 2005 5:54 pm Post subject: Green-Travel Discussion



Joined: 14 May 2003

Posts: 6000 Location: Oaxaca, Mexico This topic is addressed in a series of posts on the Green-travel list

Travelers Want a Greener Way to Travel by Air - Brian Mullis

http://groups.yahoo.com/group/green-travel/message/2507

Responses

Antonis Petropoulos

http://groups.yahoo.com/group/green-travel/message/2510

Ron Made

http://groups.yahoo.com/group/green-travel/message/2511

Jamie Sweeting

http://groups.yahoo.com/group/green-travel/message/2512

Brian Mullis

http://groups.yahoo.com/group/green-travel/message/2513

Jamie Sweeting

http://groups.yahoo.com/group/green-travel/message/2514

Peter Krahenbuh

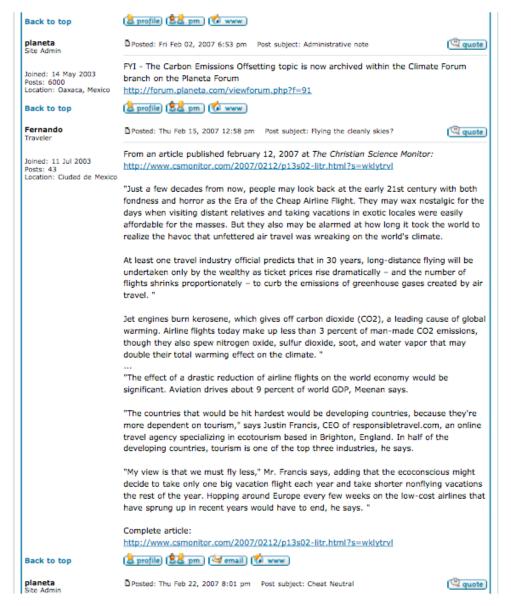
http://groups.yahoo.com/group/green-travel/message/2516

Renat Heuberger

http://groups.yahoo.com/group/green-travel/message/2531

Ron Mader

http://groups.yahoo.com/group/green-travel/message/2534 Antonis Petropoulos http://groups.yahoo.com/group/green-travel/message/2535 Renat Heuberger http://groups.yahoo.com/group/green-travel/message/2537 Related Posts John Shores http://groups.yahoo.com/group/green-travel/message/3216 (profile) (pm) (www) Back to top twburford Posted: Wed Feb 22, 2006 6:02 am Post subject: (Q quote) Traveler http://www.guardian.co.uk/climatechange/story/0,12374,1687979,00.html Joined: 14 Nov 2003 The scam of global warming is that we pay others for our complacency Posts: 13 Location: Cambridge The most destructive effect of the carbon offset trade is that it allows us to believe we can UK/Anchorage AK carry on polluting George Monbiot January 17, 2006 The Guardian (profile) (pm Back to top planeta Posted: Sun Nov 05, 2006 5:33 am Post subject: Five Live Report - Trading Trees (Q) quote Site Admin Recommended listening Joined: 14 May 2003 Posts: 6000 Location: Oaxaca, Mexico Five Live Report - Trading Trees (45 min) Sun 29 Oct - 11:10 Is the carbon offsetting industry helping the environment? http://www.bbc.co.uk/radio/aod/networks/fivelive/aod.shtml? fivelive/fireport trading trees Everyone from holidaymakers, to big corporations and celebrities like Coldplay are paying money for new trees to be planted to make up for the pollution they are causing. Carbon offsetting as its known has become big business in the UK with even the government preparing to pay millions of pounds of taxpayers money to these schemes. Reporter Matthew Chapman investigates allegations that the offsetting industry is doing little to help the environment while allowing some polluting companies to clean up their image. (profile) (pm) (www) Back to top planeta Posted: Mon Jan 08, 2007 7:49 am Post subject: recommended reading (Q) quote Site Admin Carbon Offset - Wikipedia Joined: 14 May 2003 http://en.wikipedia.org/wiki/Carbon_offset Posts: 6000 Location: Oaxaca, Mexico Conned - New Internationalist http://www.newint.org/issues/2006/07/01/



Recommended reading ... fairly strong satire! Joined: 14 May 2003 Posts: 6000 Location: Oaxaca, Mexico Cheat Neutral http://www.cheatneutral.com Kudos to John Shores for pointing out this website in his reflections http://forum.planeta.com/viewtopic.php?t=645 John writes: Quote: Intrepid Reader: As the debate heats up over the merits of carbon offsets, I thought we could use a little carbon-neutral humor. On one level it's a clever spoof of carbon offsets, but in this case you can offset cheating with non-cheating pledges. Somehow that seems to require non-Euclidean mathematics... (profile) (pm) (www) Back to top planeta Deposted: Fri Mar 02, 2007 2:00 pm Post subject: Carbon offsetting: who to trust? (Q) quote Site Admin Carbon offsetting: who to trust? - Richard Hammond/Times Online Joined: 14 May 2003 http://travel.timesonline.co.uk/tol/life_and_style/travel/article1425710.ece Posts: 6000 Location: Oaxaca, Mexico Ouote: Carbon offsetting companies came in for a drubbing in January when the government announced that only four of the UK's 59 schemes met its standards. The Department for Food and Rural Affairs (Defra) is working on a 'quality mark' that it hopes in the future will separate out the good guys from the greenwash, but while many offsetting schemes are working to bring themselves into line with Defra's code of practice, the standard won't be available until the autumn. Here I take a look at some of the UK's leading offsetting schemes to see how they compare. (profile) (pm) (www) Back to top planeta DPosted: Fri Mar 02, 2007 2:02 pm Post subject: Can you be traveling green? (quote Site Admin Can you be traveling green by buying offsets? - Barbara De Lollis/USA TODAY Joined: 14 May 2003 http://www.usatoday.com/money/industries/energy/2007-03-02-offsets-usat_x.htm Posts: 6000 Location: Oaxaca, Mexico Quote: Critics in the environmental movement also fear that selling offsets may divert public attention from what they view as a more effective remedy: stricter laws. "On an issue like climate change, where real regulation and government action are probably necessary, you don't want offsets to distract from the importance of that task," says Billy Pizer, an economist with Resources for the Future, an environmental think tank. (\$ profile) (\$\$ pm) (\$\dot{\phi} www) Back to top planeta Site Admin DPosted: Sun Apr 29, 2007 8:29 pm Post subject: NTY (quote)

Carbon-Neutral Is Hip, but Is It Green? - New York Times

http://www.nvtimes.com/2007/04/29/weekinreview/29revkin.html

Quote:

Joined: 14 May 2003

Posts: 6000 Location: Oaxaca, Mexico As long as the use of fossil fuels keeps climbing — which is happening relentlessly around the world — the emission of greenhouse gases will keep rising. The average American, by several estimates, generates more than 20 tons of carbon dioxide or related gases a year; the average resident of the planet about 4.5 tons.

At this rate, environmentalists say, buying someone else's squelched emissions is all but insignificant.

"The worst of the carbon-offset programs resemble the Catholic Church's sale of Indulgences back before the Reformation," said Denis Hayes, the president of the Bullitt Foundation, an environmental grant-making group. "Instead of reducing their carbon footprints, people take private jets and stretch limos, and then think they can buy an indulgence to forgive their sins. This whole game is badly in need of a modern Martin Luther."

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planeta Site Admin Deposted: Sun Jun 03, 2007 4:30 pm Post subject: Carbon Chaos



Joined: 14 May 2003 Posts: 6000 Location: Oaxaca, Mexico

Environment groups call for carbon offset regulation - The World Today http://www.abc.net.au/worldtoday/content/2007/s1932288.htm

Quote

Planting trees to offset greenhouse gas emissions is becoming increasingly popular in Australia and the carbon-offset industry is burgeoning. But an environment group says companies that offer to plant trees for consumers to help them offset their carbon footprint need to be regulated.

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planeta Site Admin

D Posted: Mon Jul 02, 2007 8:47 am Post subject: carboNZero



Joined: 14 May 2003

Posts: 6000

Location: Oaxaca, Mexico

carboNZero

http://www.conference.co.nz/index.cfm/31whc/general_information/carbonzero/index.html

Ouote:

The 2007 World Heritage Committee meeting will be carbon neutral. Through the Landcare Research carboNZero programme, we aim to minimise the environmental impact of the 31st session of the World Heritage Committee.

What is the carboNZero programme?

The carboNZero programme is a certification programme for minimising the effects of climate change. It encourages and supports individuals and organisations to take action to reduce their impacts on climate change by providing them with tools to measure, manage and mitigate their carbon dioxide (CO2) emissions.

Why carboNZero?

Climate change is a key issue for the World Heritage Committee and for the New Zealand Government. By assessing the meeting's environmental impact this year, we can look at how we can reduce or mitigate this impact, thus helping to address the climate change issue. According to Landcare Research, a leading New Zealand environmental research organisation, the world's climate is changing.

'Changes include increasing temperatures, rising sea levels and a greater incidence of extreme weather, such as storms, heat waves, droughts, and floods. Much of this change is as a result of human activities that increase the level of greenhouse gases in the atmosphere. Scientists expect that the world will continue to warm over the next 100 years.'

Carbon credits (or 'offsets') are generated from projects that reduce or prevent the accumulation of gases that contribute to global warming in the atmosphere. The most

common projects involve:

- planting trees
- reforestation (or preventing deforestation)
- use of renewable energy
- energy conservation/efficiency.

carboNZero certification of the 31st session of the World Heritage Committee

Through the Landcare Research carboNZero programme, we will be able to reduce the greenhouse gas emissions that are directly associated with the meeting in Christchurch, and to mitigate the emissions associated with delegates' travel and accommodation. We will do this by investing in the natural regeneration of native forest or with carbon credits from New Zealand government-approved Projects to Reduce Emissions, such as the generation of electricity from landfill gas or by wind farms. These credits are verified by third-party auditors through schemes such as the WWF Gold Standard or ISO 14064-2 (the international standard for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements). Delegates will have the opportunity to make a donation to offset their own greenhouse gas emissions.

In becoming carbon neutral, the 31st session of the World Heritage Committee will join other high-profile carbon-neutral events, including the 2002 Winter Olympics, the 2006 soccer World Cup, and TRENZ 2007 the New Zealand Tourism Industry

For further information, see the carboNZero programme FAQs http://www.carbonzero.co.nz/faq.asp

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Joined: 14 May 2003



planeta

Posts: 6000 Location: Oaxaca, Mexico

Site Admin

Deposted: Sun Jul 08, 2007 3:50 pm Post subject: Cheat Neutral Update



More from the creators of Cheat Neutral

http://www.cheatneutral.com

Children of the revolution - Western Mail

http://icwales.icnetwork.co.uk/0100news/features/tm_headline=children-of-therevolution&method=full&objectid=19335638&siteid=50082-name_page.html

Jun 23 2007

They're young, principled and Welsh. Rachael James finds a new breed of protestors making waves in Wales

Quote:

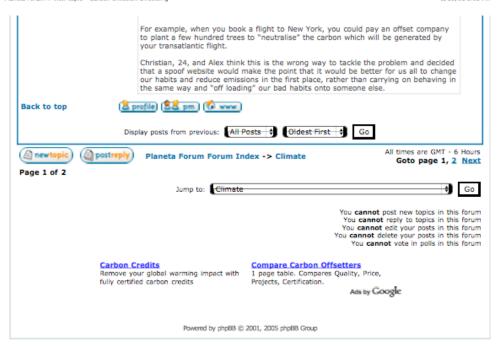
The environment is at the heart of Christian and Alex's protest. Their website, Cheatneutral.com, was devised as a way of highlighting what they see as the pointlessness of carbon-offsetting, the latest trend in environmental damage limitation.

"We were in the pub talking about carbon-offsetting and we wondered if there were other things in our life which we could offset," says Alex, 25.

"In the end, we hit on the idea that you could neutralise cheating on your partner by paying someone else to remain faithful.

"It started basically as a joke, but the issue behind it is something which we take very seriously."

Carbon-offsetting was initially introduced as a way of combating carbon emissions and works by giving consumers the opportunity to pay offset companies to invest in environmentally friendly projects, usually in less developed countries.





Planeta Forum

time to teach a new way

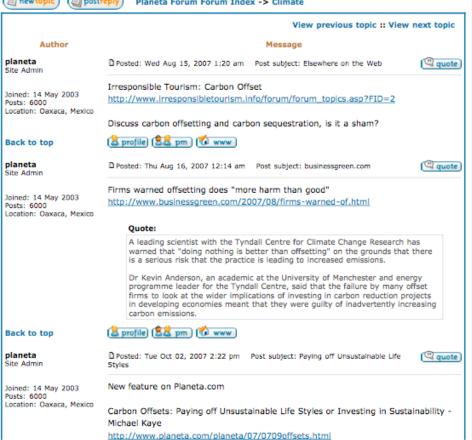
■ FAQ
■ Search
■ Memberlist
■ Usergroups
■ Register Profile Log in to check your private messages Log in

Carbon Emission Offsetting

Goto page Previous 1, 2



Planeta Forum Forum Index -> Climate



Ouote:

The new hot fad in sustainable travel these days is paying offsets for our carbon footprint. That is, to compensate for the amount our lifestyles contribute to the catastrophic largely man made changes that are taking place in the earth's climate we pay money that is supposedly used to change things back.

As far as I can figure out, the way it is supposed to work is that we add up all the carbon our vacation spews into the atmosphere. Then using math way beyond the power of mere mortals to understand, experts calculate the amount of money that it would take to remove the carbon that we have put in.

We then fork over this money to carbon offset brokers, and, after covering their overhead and administrative expenses, they spend the money on sequestering carbon by natural means, or on developing renewable energy technologies that will, they claim, result in a smaller carbon footprint from the same activities in the future.

It is a brilliantly seductive strategy. With a small manageable financial sacrifice we "offset" (or should it be buy off) our life styles. Any scheme that allows sustainability gurus to guiltlessly fly around in private jets and contaminate the atmosphere much more than the ordinary citizen has got to be worthy of our respect.

As much as I would love to be able to pay for offsets and continue merrily on with my highly privileged and satisfying life, I can't help but think that paying carbon offsets as an answer to climate change is something like taking aspirin for cancer that has very possibly metastasized. It might be comforting to look at it as a good start. It does temporarily ease the pain and you do feel like you are doing something about it, but, if it distracts you from getting the chemo or the radiation that might really help in the long run, it is, to be charitable, a short sighted strategy.

When I asked a scientist friend of mine who is one of the pioneers in climate change research what he thought of offsets, he put it very succinctly, "The science is doubtful and the social policy is worse."

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planeta Site Admin

Posted: Fri Oct 12, 2007 5:29 am Post subject: Recommended listening

quote

Recommended listening

Joined: 14 May 2003 Posts: 6000 Location: Oaxaca, Mexico

Carbon offsetting industry - Does it work?

http://tinyurl.com/2ctn3c

Quote:

When you fly do you feel guilty? Would you like to pay money to an environmental project that benefits communities in the developing world and apparently offsets your carbon emissions?

One Planet's Richard Hollingham looks at the carbon offsetting industry and asks

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planeta Site Admin

Deposted: Fri Oct 12, 2007 5:38 am Post subject: News from the Tyndall Centre



News from the Tyndall Centre Joined: 14 May 2003 http://www.tyndall.ac.uk/media/news/latest_news.shtml Posts: 6000 Location: Oaxaca, Mexico Does carbon offsetting do good? -Listen to the speaker's podcasts and see their presentations from the Tyndall debate at the University of Sussex. Also now available as a Briefing Note Listen again to our annual Tyndall Centre straw poll debate on the validity of carbon offsetting as a credible response to climate change. First, Tyndall Centre researchers and guests looked at what offsetting actually does, by examining the evidence-base on whether projects are beneficial to people in developing countries. Second, an invited panel and audience debated and contested the validity of offsetting. » Read more: http://tyndall.webapp1.uea.ac.uk/publications/briefing_notes/bn21.pdf » Further information: http://www.tyndall.ac.uk/research/programme4/carbon_offset_debate.html (profile) (pm) (www) Back to top planeta D Posted: Thu Nov 15, 2007 6:50 am Post subject: How to make tourism greener Site Admin "If I hear the words 'carbon offsetting' once more, I will scream. These kind of papal Joined: 14 May 2003 indulgences were sold in the Middle Ages." Posts: 6000 Location: Oaxaca, Mexico Jeff Gazzard, Aviation Environment Federation http://news.bbc.co.uk/2/hi/7094559.stm (profile) (pm) (www Back to top D Posted: Fri Nov 30, 2007 1:19 pm Post subject: Carbon Offsets are a Joke - Tim Quote planeta Site Admin Carbon Offsets are a Joke - Tim Leffel Joined: 14 May 2003 Posts: 6000 http://travel.booklocker.com/2007/11/26/carbon-offsets-are-a-joke Location: Oaxaca, Mexico Quote: When it comes to travel, the real problem is that the industry is inherently at odds with the whole idea of truly green travel. The biggest travel companies (and therefore advertisers) are often the biggest energy hogs. The kind of tourism most travel magazines promote is usually the most wasteful. Let's face it: a cruise line by its very nature and mission can never be very good for the planet. As Paul Brady from Jaunted noted after attending Condé Nast Traveler's World Savers Congress 2007, 'We never did end up hearing how the travel industry could go green without pandering. (The constant mentions of how selling 'green' travel improves the bottom line didn't convince us that the industry has wholly altruistic motives.)' 2 profile S pm www Back to top

D Posted: Tue Jan 01, 2008 12:40 pm Post subject: Been there, done that ... got the Quote

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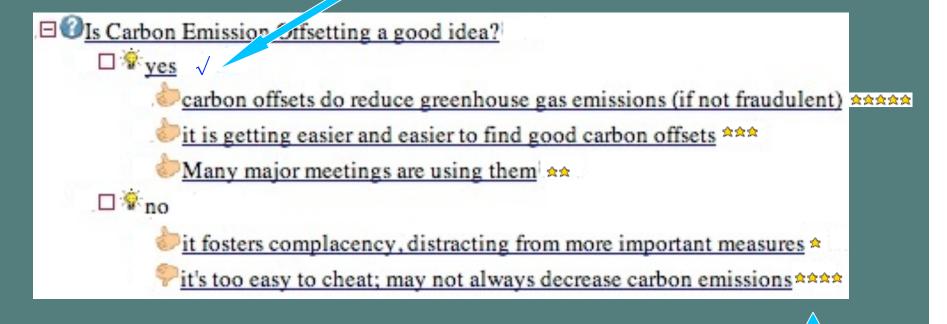
Been there, done that ... got the offset - Don Butler/The Ottawa Citizen Joined: 14 May 2003 Posts: 6000 http://tinyurl.com/38aauy Location: Oaxaca, Mexico July 2007 Quote: Travel guides are urging those with wanderlust to 'fly less and stay longer.' Activists are blocking airline offices, shutting travel agencies and handing out free rall tickets. With attitudes starting to shift, some airlines are fighting back accusing critics of 'intellectual laziness.' Don Butler rises above the jetsam to find out what it all means to the future of air travel. (profile) (mm) (www) Back to top planeta Posted: Sun Jan 06, 2008 7:49 am Post subject: Costa Rica (Q) quote Costa Rica claims first zero emissions airline - Leo Hickman Joined: 14 May 2003 http://leohickman.wordpress.com/2008/01/03/costa-rica-claims-first-zero-Posts: 6000 Location: Oaxaca, Mexico emissions-airline/ Quote: I didn't know it at the time, but I have flown with the "world's first and only zero emissions airline". But don't get too excited. (profile) (pm) (www) Back to top planeta Posted: Tue Feb 26, 2008 4:50 am Post subject: Bush Telegraph (Q) quote Site Admin Carbon offset schemes under question - Bush Telegraph 26/02/2008 Joined: 14 May 2003 http://www.abc.net.au/rural/telegraph/content/2006/s2172824.htm Posts: 6000 Location: Oaxaca, Mexico http://mpegmedia.abc.net.au/rn/podcast/current/audioonly/bth 20080226.mp3 Related Carbon Offset Guide Australia http://www.carbonoffsetguide.com.au Back to top (profile) (pm) (www) planeta Site Admin Posted: Mon Mar 31, 2008 4:56 pm Post subject: Here's my take ... (quote I was interviewed by a journalist who wanted to know my take on carbon offsetting. Joined: 14 May 2003 Here's my reply: Posts: 6000 Location: Oaxaca, Mexico Quote: The Planeta.com view is that individual carbon offsetting is akin to the papal indulgences sold in the Middle Ages and beautifully spoofed by Cheat Neutral. Long-haul transportation needs to be encouraged when it has a pro-social and pro-eco aim. It could even be supported without the loftiest of lofty intents, but

we'd better be aware, conscientious, about the impact of our actions or inaction. The problem of global warming requires a collective response and the sooner the better. How would you answer the question? (profile) (mm) (www) Back to top Amanda Posted: Fri Apr 18, 2008 2:46 am Post subject: Carbon Offsetting - a UK tour (quote Traveler operators view Our company automatically offsets the carbon emissions of our clients flights Joined: 14 Feb 2008 Posts: 1 (whether they buy the flights from us or not), by planting indigenous saplings in Location: UK northern Tanzania. We are aware that this is a sticking plaster rather than a remedy when it comes to climate change, but we do it because, as a tour operator encouraging travel, we recognise that we have responsibilties. The offsetting scheme we chose to set up also has more to it than just a carbon offsetting angle. It is also encourages biodiversity and is a poverty alleviation scheme at the same time. No, it's not perfect. Yes, we understand the flaws in what we're doing, but we'd still rather do something to help rather than do nothing. We believe that the right kind of sensitive, responsible travel can bring huge benefits to local people, wildlife and the environment. Simply stopping travelling is not the answer. We need to travel sensibly and responsibly. (profile) (pm) (www) Back to top planeta Deposted: Fri Jun 27, 2008 5:01 am Post subject: Australia to crack down on bogus quote Site Admin carbon offsets ACCC to crack down on bogus carbon offsets - ABC Joined: 14 May 2003 Posts: 6000 http://www.abc.net.au/news/stories/2008/06/27/2288218.htm Location: Oaxaca, Mexico The Australian Competition and Consumer Commission (ACCC) has signalled it is getting tough on businesses who offer bogus carbon offsets. Related Carbon claims and the Trade Practices Act - Australian Competition and Consumer Commission http://www.accc.gov.au/content/index.phtml/itemId/833279 Australian Competition and Consumer Commission (ACCC) http://www.accc.gov.au (profile) (mm) (www) Back to top planeta (Q) quote Deposted: Thu Jul 03, 2008 11:24 pm Post subject: Dallas Morning News Site Admin Carbon-offset programs - Dallas Morning News

Powered by php88 © 2001, 2005 php88 Group

This discussion, in argument map form, becomes:

plus rating aggregation



plus ratings

Benefits of Argument Mapping

- No scattering: all content on a given topic is co-located, regardless of who authored it or when
- No soapbox problem: each unique point can only be made once, so there's no room for repetition!
- Bias towards well-founded arguments: the system makes the arguments for/against ideas or the lack thereof visible



Better, more complete content

Small voices can be heard

High signal to noise ratio - easier to find the good stuff



Conversations
(IM, forums, email)

Too loose
Scattered,
redundant,
unsystematic



Conversations
(IM, forums, email)

Too loose
Scattered,
redundant,
unsystematic



Aggregation
(wikis)
Too tight
Fighting for a single page, LCD content





Conversations
(IM, forums, email)

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Scattered,
redundant,
unsystematic



Argumentation

Just right

A place for everything; everything in it's place



Aggregation
(wikis)
Too tight
Fighting for a
single page, LCD
content

The Challenge of Scale

Formalizing ideas into argument maps can be burdensome

=> use expert facilitators to map meeting discussions

=> limited to *small scales*

How can argument mapping work for large groups?

The Surprising Power of Social Computing

♦ When communities *exceed critical mass*, users become motivated to contribute *massively*, so they can

Become a hero

Find their tribe

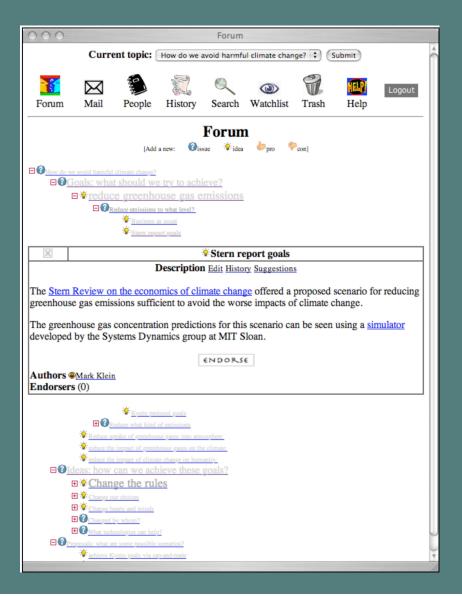
Can we exploit this to incent users contribute in the form of deliberation maps?

The signal/noise benefit of argument mapping *increases* with community size => "hero" incentive increases with scale

Lack of redundancy means that each point in a map garners *more attention* => "tribe" incentive increases with scale

Explicit communication, uncomfortable in small groups, becomes customary and even critical in large ones => barriers reduce with scale

The MIT Deliberatorium



Integrates argumentation theory with large-scale social computing

- open authoring to enable many eyes/hands effects
- meta-contributors to manage process
- watchlists/rollbacks for selfhealing
- Rating/social translucence to incent quality contributions and focus attention

The Role of Authors

Unbundle – break your thoughts into points that each contain just one issue, idea, or argument.

Locate – search the argument map to see where your point(s) belong, and whether they are already present.

Enter – If it's a new point, attach a new post to the issue, idea or argument it logically refers to. Otherwise, refine the existing post.

The live-and-let-live rule: If you disagree with someone, add a "con" argument or a competing idea, but do not edit their posts to undercut them. You should only edit a post if your goal is to strengthen it.

The Role of Moderators

Check pending posts to ensure that they are unbundled, named, typed, and located correctly, and point out/fix structural errors - a coaching/tutorial role

Certify well-structured posts: only certified posts "count" (can be viewed, or rated, by non-authors) -> key incentive

Remove clearly inappropriate (e.g. abusive or spam) content but otherwise remain strictly content-neutral

Many communities (debaters, lawyers, scientists, philosophers, librarians) have the requisite skills

The Role of the Entire Community

Discuss – leave comments on the posts that raise questions, suggest improvements, and so on. These, if compelling enough, can be formalized into the argument map by authors.

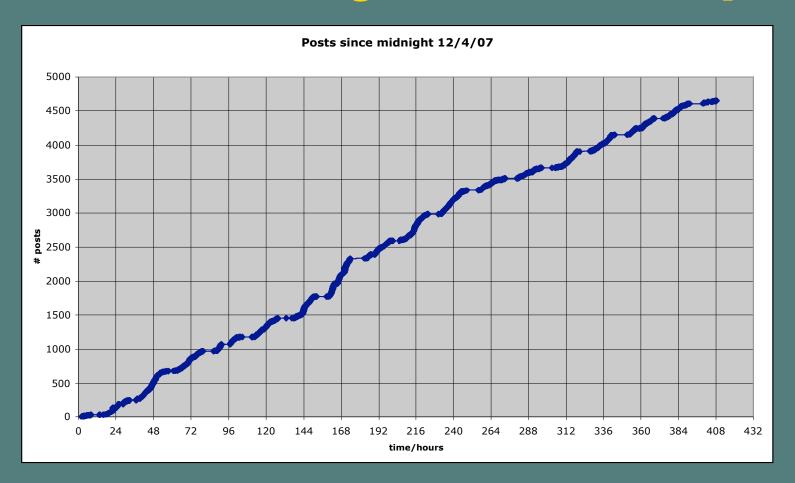
Rate - rate posts to help highlight important issues, promising ideas, and compelling arguments. This moderates attention allocation, and encourages high-quality deliberation.

Field Evaluations

Naples Evaluation

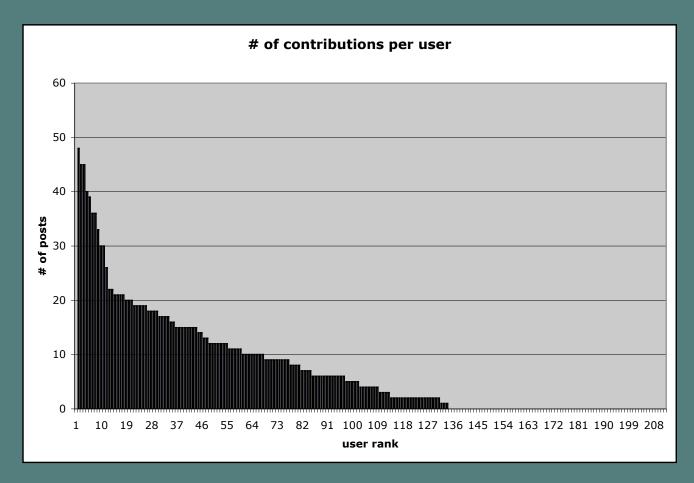
- 3 weeks
- 200 masters-level IT students @ University of Naples
- Closed (single-user) authoring
- Topic: what use should our country make of bio-fuels?

Collective Intelligence Doesn't Sleep



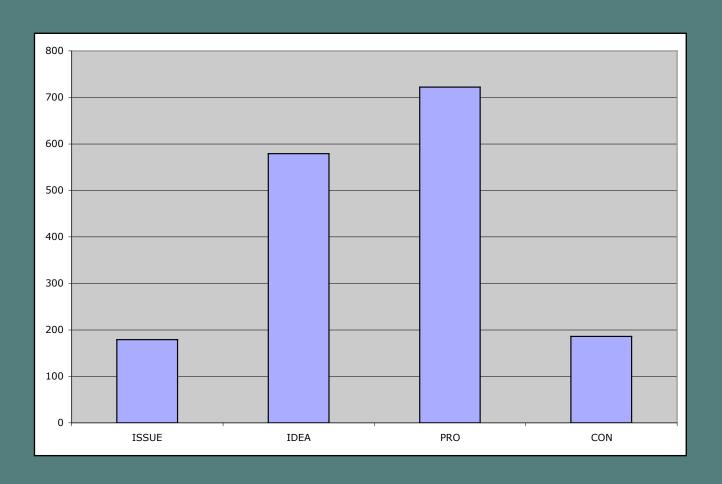
~3000 posts (~1900 certified) plus ~2000 comments

Power Law Participation



but with a thick middle - scale doesn't discourage authors as much?

Ideas and Pros Dominate



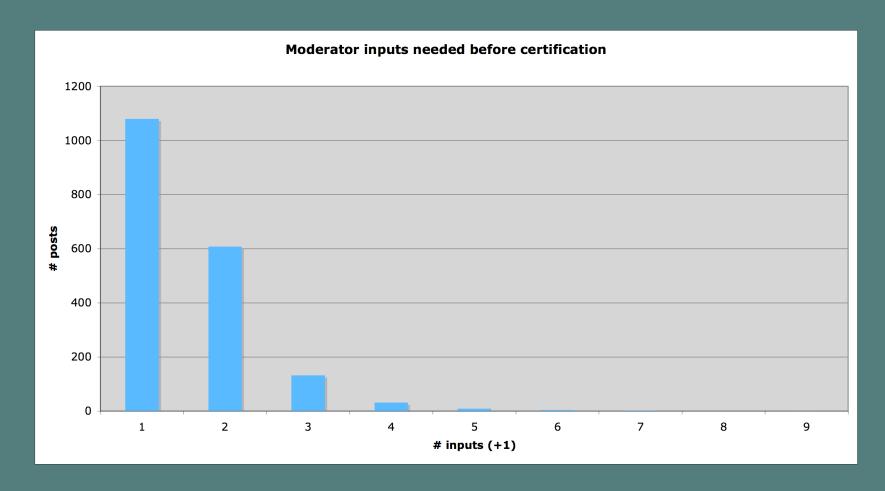
Students reluctant to criticize peers?

Lively Debate

Depth of argument tree	% of all arguments
1	85%
2	12%
3	2%
4	1%

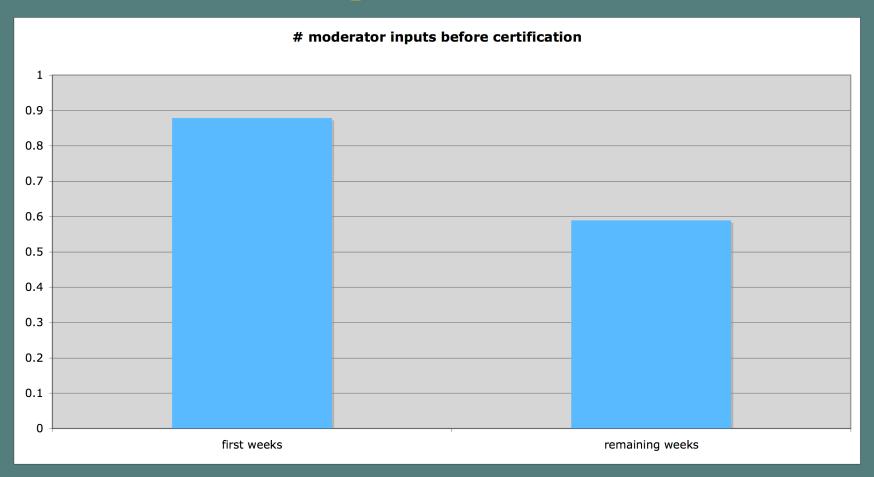
About 70% of arguments addressed posts by other authors

Most Posts Were Well-Mapped from the Start



60% required no changes before certification

Users Improved Over Time



moderator inputs needed to get certified decreased 35% with time (p $< 10^{-8}$)

Qualitative Observations

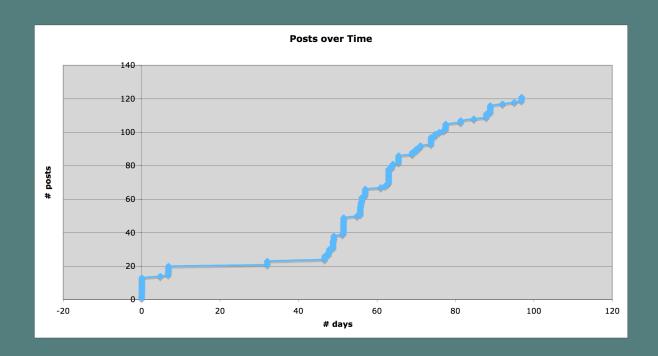
- Efficacy: a large non-expert community was able to comprehensively cover a complex contentious topic in just a few days with no top-down coordination
- Structure: few out-of topic posts, "quite" well-organized, low redundancy
- Moderation: It was difficult for 2-3 moderators to keep up with 200 active authors - probably need 5% of users
- Idiosyncratic incentives? Motivated by grades, rather than intrinsic or outcome-related incentives

Intel Evaluation

- 4 weeks, 73 authors
- Open authoring
- ◆ Topic: opportunities and risks of open computing

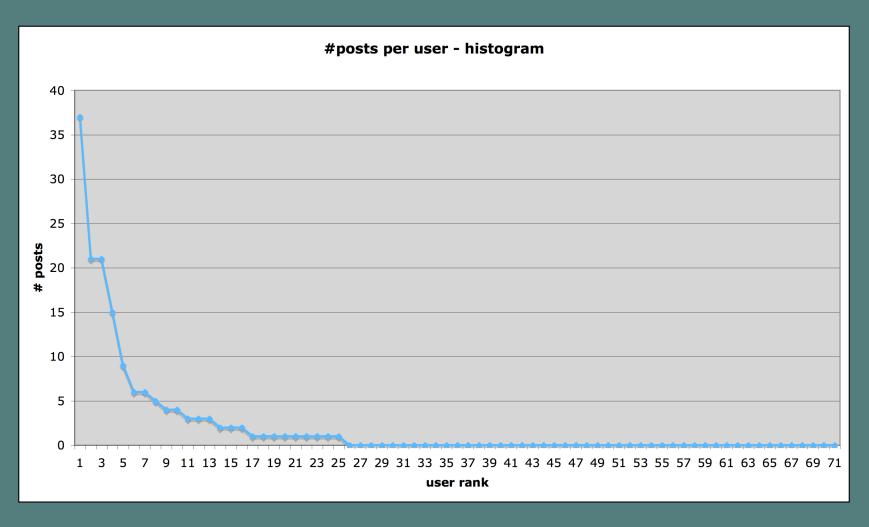
Moderate Scale

- ♦ 73 author accounts: 51 from outside Intel
- ♦ 64 certified posts: 40 from outside Intel
- ♦ 25 ratings

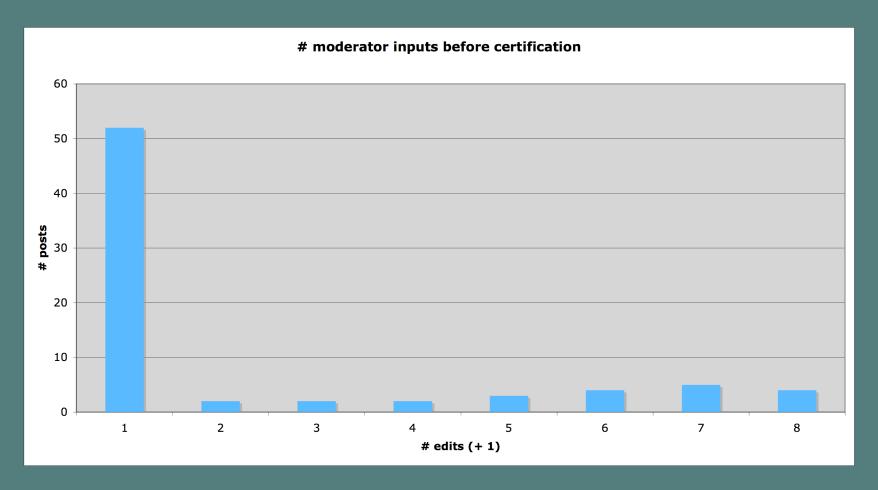


neither extrinsic incentives nor critical mass

Power Law Participation

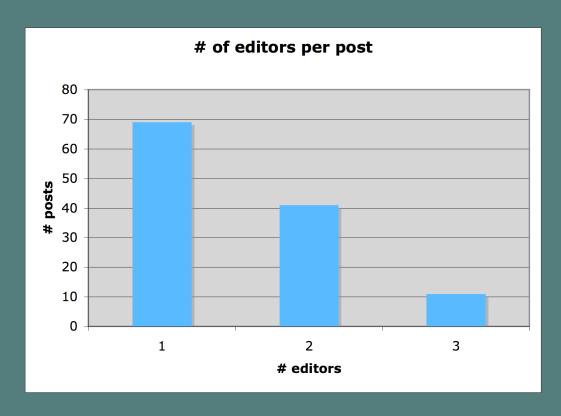


Most Posts Well-Mapped from Start



70% required no moderator inputs to get certified A small number of "problem posts"

Many Multi-Authored Posts



Allows many hands/eyes effects

Qualitative Observations

A compact, substantive and well-organized map

A cheap way to get usable outside input

```
¬□ Sopic: balancing productivity and security with open computing

¬□ What kinds of open computing approaches can increase productivity?

          Q□  Discussion forums

¬□ 

Manage access at the database and let the analyst choose the tools.

                Q□ bleads to better data dictionary and data models...
                Q □ Inalyst Flexibility = Speedy Recommendations/Decisions
                      Q□ bOffer standard reports
                Q□ bresults in smarter analysts
                Q book no need to wait for programmers to create a new report
          Q ☐ 🕏 web forums
                Q Ptend to create a lot of repetition and 'noise'
                Q = lots of input

¬□ prediction markets

                Q Pprediction markets work well only with a limited, well-defined set of options
          🔍 🖃 🖁 wikis
                Q bwiki are diffusing also in companies
                Q ballows us to quickly gather broadly-based consensus on a subject

¬□ What are the security risks of open computing?

          Q = $\frac{1}{2} \text{too many trees can also obstruct to see the forest}
          Q□ FCompetitive Intelligence
          Q□ wuse of aggregate data to identify individuals
          Q□ leak of meta-data
          Q□ * leak of bookmarking information
          Q□ * Loss of Intellectual Property
          Q□ Fincreased risk of system compromise

¬□ The Destabilization of the computing environment

                Q□ binstability of new tools
          Q□ Fincreased risk of social engineering
          Q□  Loss of Personal Information
     Q□What are the risks of closed computing?
          Risk of missing out on good ideas
          Q Risk of duplication of effort
          Q□ * Hard to find data in a timely manner
          Q□ PExclusion is non inclusive.
     □ OHow can IT address the security risks associated with open computing?
          Q□ industry-based standards work

¬□ When should we provide open vs customized data access tools?

                Q□ Always provide open tools
          Q□②What should IT do in terms of creating and enforcing rules and standards to ensure a secure environment?
                Q□ include policy statement re use of RSS and Bookmark servides
                Q□ Authority Rating System
```

Contributions

- Novel integration of argumentation & social computing
 - promises qualitatively improved signal-to-noise, at scale
- Good results from evaluations to date
 - Heavily used
 - Quick learning curve
 - Remarkably complete and well-organized output

Next Steps

- > Scale: content visualization, search
- Linking with Narratives: maps as indexes, auto-narratives
- Metrics: maturity, polarization, bias, completeness ...
- Self-sustaining: training, moderator support, incentives
- Applications: to "real-world" conversations that matter: corporate, government, scientific, educational

The Deliberatorium will, we hope, help us enable more creative, systematic, and well-grounded large-scale deliberations about complex problems

Technical Issues

- How enable high-quality structure?
 - Many people are poor at argument mapping
 - ♦ Large volume may lead to competing issue skeletons
- How enable high-quality content?
 - ◆ Controversial topics elicit sabotage, gaming, noise
- How manage impact of change?
 - ◆ Changes have non-local impacts in an argumentation structure
- How mediate attention sharing?
 - ♦ How deal with sheer size of complex issue spaces?
 - ♦ How ensure systematic coverage without co-location & central mediator?
 - ♦ How avoid balkanization & lost voices? How maximize cross-fertilization?
- How determine consensus?
 - ♦ In complex domains, issues are *interdependent*, creating vast decision spaces
 - ♦ Simple selection must give way to *collective nonlinear optimization*

How enable high-quality content?

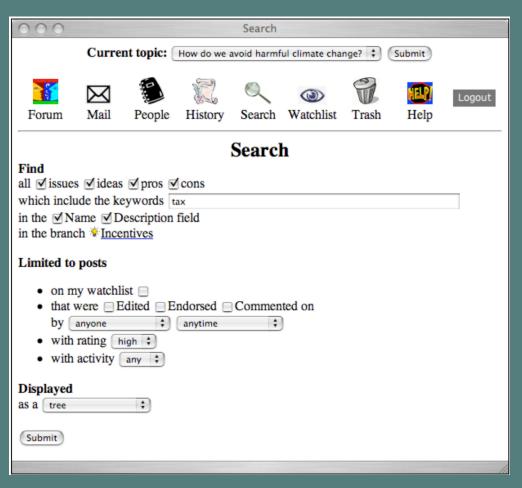
- Wiki "anyone can edit anything" model
 - Ensures diverse perspectives and self-healing content
 - ◆ Amateurs can over-write experts -> motivation issue
 - Muddies credit assignment for reputation tracking
 - ♦ Controversial topics lead to edit wars
- Forum "one author many commentors" model
 - Encourages expert contributions
 - Single author bottleneck
 - Posts are usually static, so comments do not impact quality
- Collaboratorium design choices
 - Anyone can create a post
 - Only authors (or their designated proxies) can edit it
 - Anyone can make/endorse suggestions
 - Users get credit for highly rated posts or suggestions
- Intended consequences
 - Each post represents a single perspective
 - ◆ A committed self-selected cadre gathers to express that perspective as clearly and fully as possible, enriched by substantial community feedback
 - Alternative perspectives are captured in *separate* posts no need for edit wars

How enable high-quality structure?

- Initial issue 'skeleton' created by experts
- Search tools find matching branches, annotated with activity level
 - So users can find *most-attended* relevant branch
- Only editors can re-structure argument tree
 - ◆ A visible privilege earned based on proven argument-mapping skills as well as content-neutrality
- Intended consequences
 - Fracturing is reduced by coherent initial skeleton
 - Users usually put posts in right "ballpark"
 - Editors ensure proper argument mapping
 - Users are motivated to develop argument mapping skills
 - "stigmergic" self-reinforcing convergence process

How manage impact of change?

 Watchlist and search functions, extended to notify users about changes to linked posts, to enable self-healing



How mediate attention sharing?

- Active, "hot", and highly-rated branches are visually salient and can constrain search
- Users can tag items as "hot" (using token budget)
- Users can create/search for "calls-for-input"
- Intended consequences
 - ◆You feel part of a team because you can "see" it act
 - ◆Users rapidly exploit "fertile" areas (stigmergy) and attend to posts that need improvement

How enable consensus?

- A special "proposal" branch consists of unique combinations of ideas from other branches
- New proposals can extend existing ones
- Users can endorse proposals
- Intended consequences
 - Users pool expected utility judgments to guide a collective optimization search process

Strategic Issues

In what *contexts*, with what *people*, will this give good results?

Possible Applications

	Exploration	Convergence
Citizenship	*	
Change agents	*	
Governance	*	
Science		
Engineering		
Business	*	
Education		

A trail of crumbs ...

- Can we design a sequence of applications that develop self-sustaining communities for a broadening range of uses? e.g.
 - ◆Start with wikipedia for climate change interventions, to develop a knowledge base and expert community
 - Invite change agents/businesses/executives to use the idea handbook and pose questions to the community
 - Develop enough credibility/impact to become the forum of choice for policy debate

Our approach

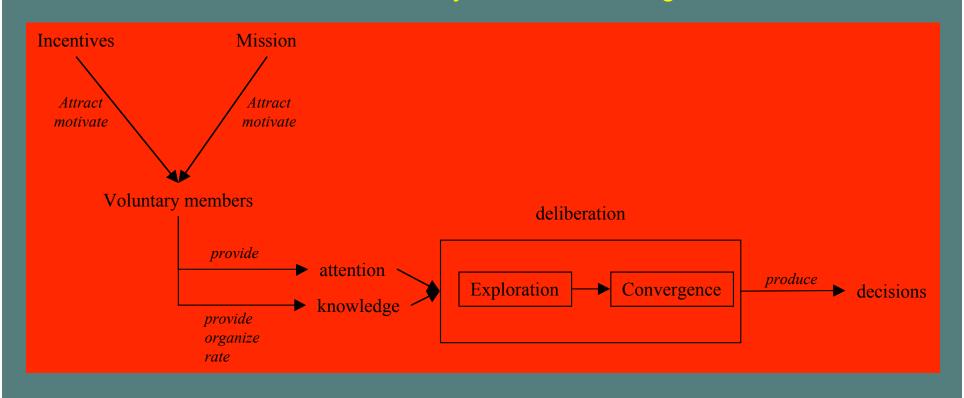
Technical: Trade-off between scalability and structure, defining suitable formats for on-line arguments, Argument evaluation and scoring (quality & impact), Robustness to attacks and unfair ratings, ...

Organizational: Roles & rules, Incentives, Manage the trade-off between exploration and convergence, ...

Strategic: identify users and stakeholders, critical mass, companies and other organizations involvement, ...

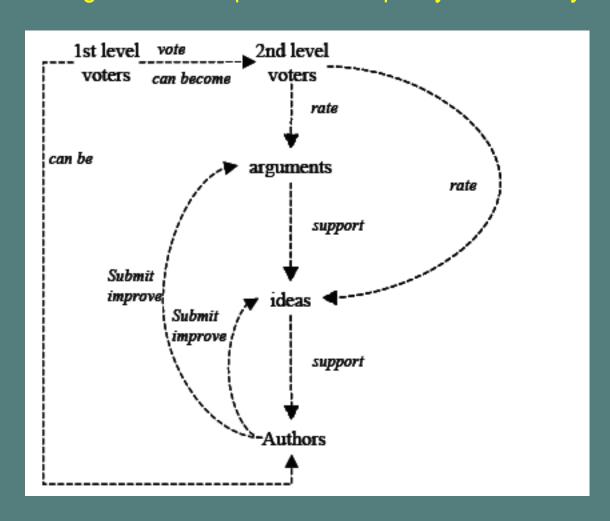
Design the argumentation community

On-line community as a virtual organization

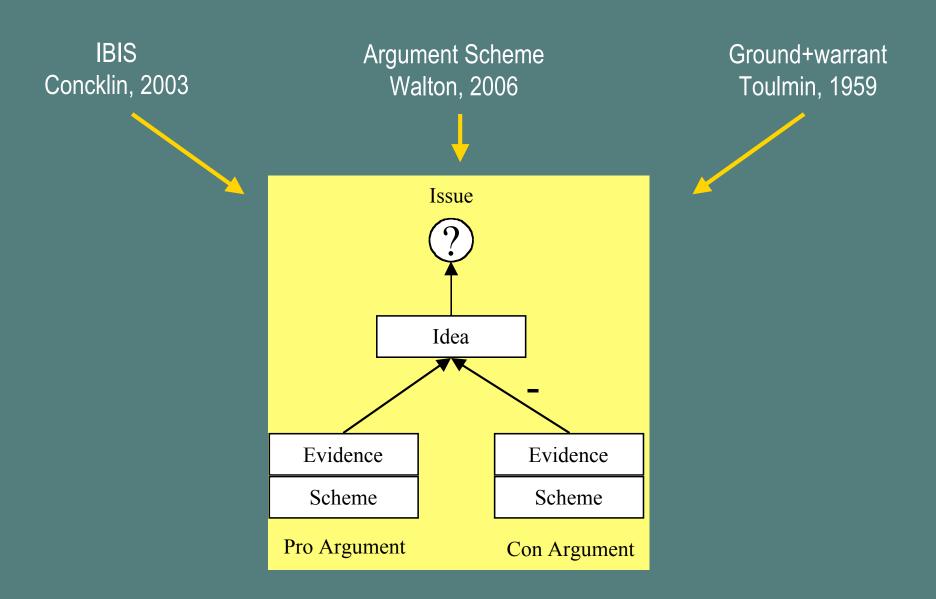


Design the argumentation community

The on-line argumentation process in a proxy democracy scenario



The design of the knowledge format



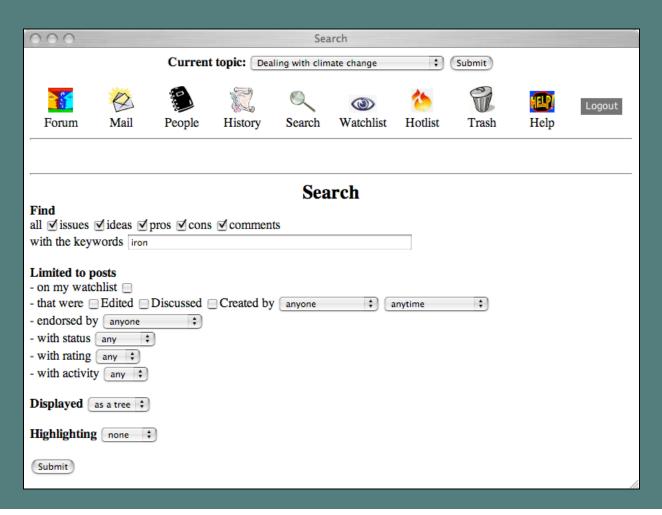
Scale-Enabled Incentives

- Finding your tribe
- Having an impact (becoming a hero)
- ◆Reputation
- Networking
- ◆Profit
- ◆Self-definition
- ◆Entertainment
- ◆Self-development

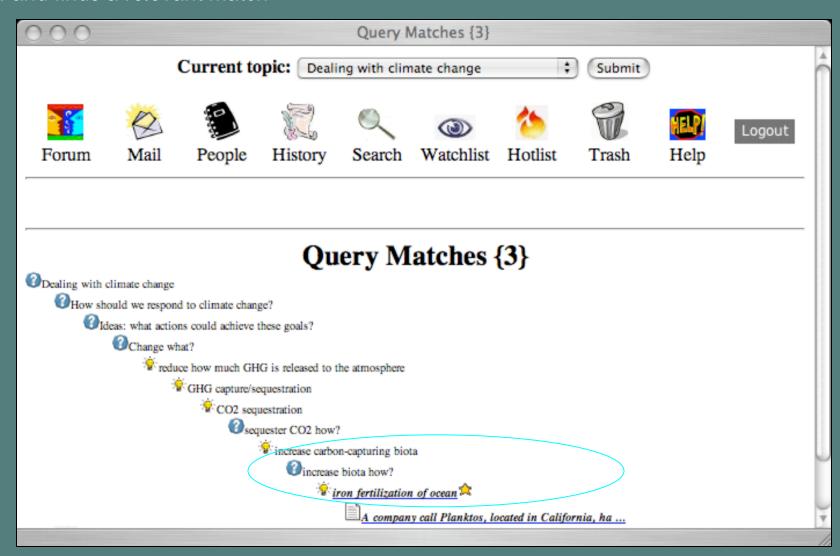
Virtuous Emergence

- Idea synergy
- Diversity (the long tail)
- Wisdom of the crowds (Condorcet jury theorem)
- Many eyes
- Many hands
- Small worlds (connecting people)
- Quality competition
- ◆ Ad hoc organizations
- Matchmaking (tasks to resources)
- ♦ Economies of scale
- Building communities
- ◆ Bird's eye view

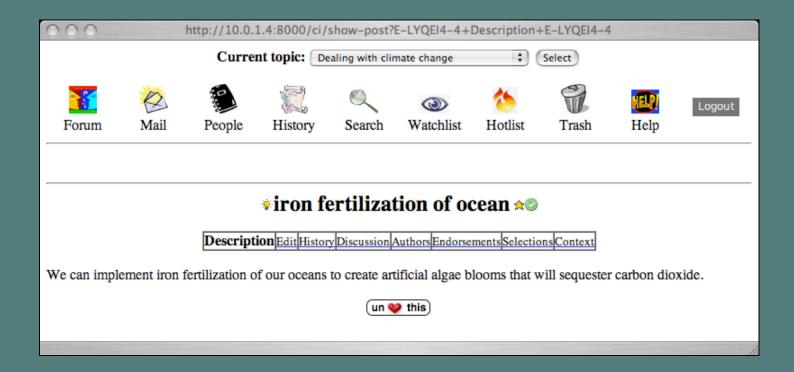
Kara, an MIT PhD student, wants to learn more about something she read in the newspaper, about a plan to add iron to the oceans to help with climate warming somehow. So she uses the search function to look for articles that mention iron:



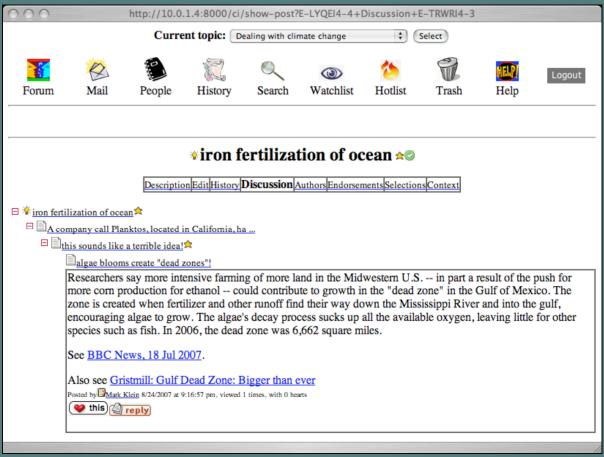
... and finds a relevant match



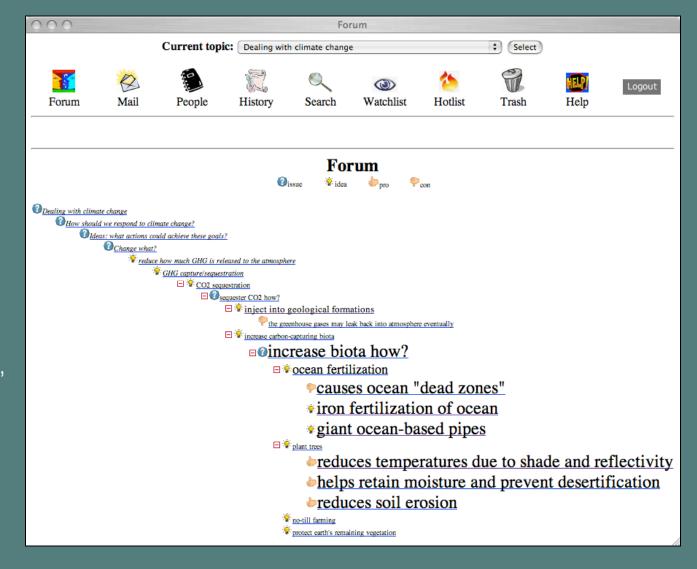
... she clicks on the article



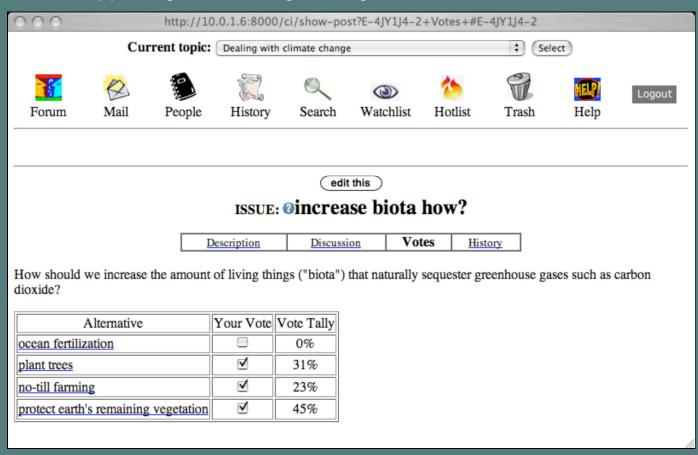
Now she can see why people would consider putting iron in the ocean: it encourages the growth of living things that sequester carbon dioxide, a greenhouse gas. Interested in learning more, she clicks on the discussion tab to see what comments other people have left on the topic



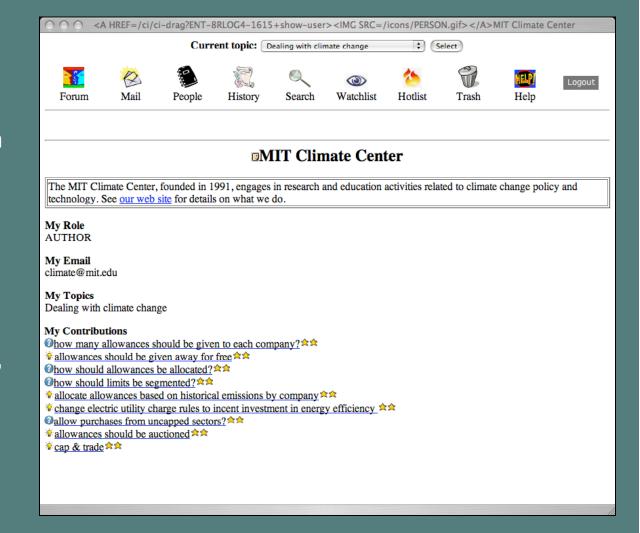
She can see that iron fertilization is controversial. It's time to step back and see if the same goals can be achieved with fewer negative effects. By looking at nearby articles in the topic tree, she can see that there are other ways to sequester greenhouse gases by encouraging plant growth, which have fewer negative points, judging from the "pro" and "con" articles linked to them, than ocean fertilization



Kara sees that the topic has a score and she also knows that these scores are not like a traditional poll, but that they keep into account people votes as well as the strength of the pro's and con's supporting or attacking the arguments.



Kara found that she was particularly influenced by articles that were authored, or endorsed, by organizations she felt she can trust. Every user has a reputation score and a collaboratorium home page where you can learn about their interests, as well as see what they have contributed. When Kara found an article she liked, she checked out the author's home pages to learn more about them. She could see. for example, that the Climate Change Center at MIT has authored many highly-rated articles: she'll keep her eye out for their work in the future.



Kara was impressed by the depth and breadth of the contributions. The material covers a wide range of topics, ranging from ideas for making houses more energy-efficient, to climate-related governmental policies.

The contributors represent scientists, educators, policy makers, engineers and so on from think tanks, corporations, university research centers, and NGOs from around the world. Many are able, by virtue of their access to specialized expertise and sophisticated simulation models, to make authoritative contributions concerning the strengths and weaknesses of different climate-related technologies and policies.

People of all background and political stripes are represented. Everybody gets to make their own pitch, and all the ideas or arguments on a given subject appear side-by-side so they can be compared directly with one other. Nobody can dominate the discussion because each idea and argument appears just once, in its own article. There seems to be a real community ethos built around the idea of careful well-founded critical thinking. You can tell: the highest-rated articles, and the most active and respected members of the community, all seem to reflect this aspiration.

How Does it Work?

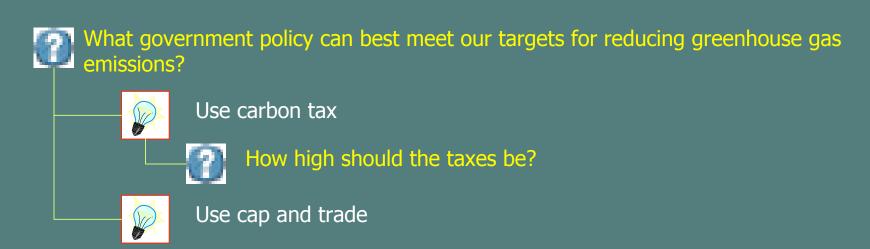


What government policy can best meet our targets for reducing greenhouse gas emissions?

Several of us have some ideas, so we enter them:



Each of these ideas raises other questions, however. If we use carbon taxes, for example, we need to decide how high the taxes should be:



If we use cap & trade, we need to decide how the emissions certificates should be distributed:

